

REMARKS

Reconsideration and allowance are respectfully requested in view of the foregoing amendments and the following remarks.

Claims 1-8, 10, and 12-22 are pending this Application.

Claims 9 and 11 are cancelled without prejudice.

Claim 22 is a new claim.

Regarding the Information Disclosure Statement

Applicant is providing an additional Information Disclosure Statement listing the references in the specification as indicated in the present Office Action. Applicant respectfully requests that the additional art be considered.

Regarding the Claim Objections

Claims 4, 5 and 8-19 were objected to because of a few informalities. Applicant appreciates the Examiner's comments with respect to these claims and has amended the claims in accordance with the Examiner's suggestions. Applicant respectfully requests that the claim objections be withdrawn.

Regarding the § 112 Rejection

Claims 8-21 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended independent claim 8 in order to make it more definite and particularly point out and distinctly claim the subject matter which the Applicant regards as the

invention. Applicant has included an output portion in claim 8 in order to complete a passage through the filter.

Applicant has also amended claim 20 in order to be definite and distinctly claim and particularly point out the subject matter which the Applicant regards as the invention. Applicant appreciates the Examiner's indication of confusion and believes that the claims are now distinct and clear. Applicant respectfully submits that the rejected claims 8-21 are now distinct and clear and ready for allowance. Applicant respectfully requests that the § 112 rejection be withdrawn.

Regarding the § 102 Rejection

Claims 8, 10 and 16-19 were rejected under 35 U.S.C. § 102(e) for being anticipated by Shen (U.S. Patent No. 6,370,404).

Applicant respectfully submits that it does not require a close look at Shen to notice that the Shen resonators are all edged coupled (transverse coupled).

Conversely, amended claims 8, 10 and 16-19 require both transversely spaced resonator sections and longitudinally spaced resonator portions. Furthermore, these claims require an open-ended enclosure over the at least first resonator, second resonator and the one or more additional resonators. As such, Applicant respectfully submits that Shen does not anticipate the rejected claims 8, 10 and 16-19. Applicant respectfully requests that the § 102 rejection be withdrawn.

Claims 8-10 and 16-19 were also rejected under 35 U.S.C. § 102(b) as being anticipated by Chang et al. ("*A Modified Parallel-Coupled Filter Structure...And Response Symmetry*").

Applicant respectfully points out that Chang like Shen teaches transverse (or edge coupling) only. For example, in Figure 2A (of Chang), the coupling between resonators i-1 (labeled as "tank i-1") and i (labeled as "tank i") is achieved by "edge" coupling. Similarly, the coupling between resonators i (labeled as "tank i") and i+1 (labeled as "tank i+1") is also

achieved by “edge” coupling. The configuration shown in Figure 2A of Chang has a disadvantage in that parasitic coupling between non-adjacent resonators (such as “tanks $i-1$ ” and “ $i+1$ ”) via “gap” coupling (longitudinal coupling) will lead to filter response deviation from Chebyshev for a maximally flat response. The parasitic gap coupling can seriously affect the performance of the filter both in the amplitude versus frequency response and group delay versus frequency response. Furthermore, Chang does not teach, allude to or render obvious an open-ended enclosure over any of the resonator portions. As such, Applicant respectfully submits that claim 8-10 and 16-19 are not taught, alluded to or anticipated by Chang. Applicant respectfully requests that the § 102 rejection be withdrawn.

Claims 8, 10, 14, 16, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ye, et al (U.S. Patent No. 6,067,461). Applicant respectfully points out that Ye, at first glance, appears to be similar to the presently claimed invention by having a coupling between the input and a first resonator as a “edge” type of coupling. Then the coupling between the first and second resonators as a “gap” type coupling. But, Ye requires a resonator that is split into two sections (e.g., Figure 5, elements 104a, 104b and 106a, 106b). Applicant respectfully submits that there is no teaching in Ye which provides for a non-split resonator section. Ye would not operate effectively in its intended high power application if it did not utilize a split resonator configuration. As such, Ye teaches away from the presently claimed invention. Furthermore, and just as importantly, the transverse dimensions of Ye’s split sections are quite large compared to the width of Ye’s input line 112. The large transverse dimensions of Ye’s resonators are required in Ye for high-power applications. Furthermore, large transverse dimensions have undesirable effects on the performance of a filter at high frequencies.

Furthermore, Ye does not teach, allude to or render obvious an open-ended enclosure over one or more of the resonators. Even if Ye did have an open-ended enclosure over one or

more of the resonators, the dimensions of the resonator would be such that the cutoff frequency of the enclosure would be below that of the filter's frequency, thereby propagating parasitic signal in a pseudo wave guide over the Ye filter. As such, Ye would not be able to provide an advantageous wave guide with a cutoff frequency above the filters operating frequency as claimed in the present application.

Claim 9 has been cancelled.

Claims 15, 18 and 19 are dependent either directly or indirectly upon claim 8 and are therefore not rendered obvious by Ye for the reasons discussed above with respect to claim 8.

Furthermore, with respect to claim 15, claim 15 requires that the thickness of the dielectric substrate from the top side to the bottom side is at least 1/20th of the high frequency filter's pass band frequency's wave length in the dielectric substrate. Applicant respectfully disagrees with the Examiner that the thickness of the dielectric substrate is considered an obvious design modification. The reason being is Applicant has obtained unexpected results as discussed in the present application at page 12, lines 15 through page 13, line 5. Applicant points out that it is unusual in a design of high frequency filters (1-100 GHz) to provide a substrate that is as thick as the substrate being claimed in claim 15. In fact, an obvious or conventional design standard in high frequency filter design is to have the substrate being less than 1/20th of the wavelength in said dielectric substrate because if the dielectric thickness is larger it causes parasitic coupling between the resonators such that the frequency response of the filters is hard to control. Conversely, in the presently claimed invention, it was discovered that because of the pseudo wave guide, the parasitic effect from the thick dielectric is controllable so that there is little effect on the frequency response of the filter. Applicant respectfully submits that claim 15 is not rendered obvious due to unexpected results and respectfully requests that this § 103 rejection be withdrawn.

As for claims 15, 18 and 19, these claims are not taught, alluded to or rendered obvious for the reasons discussed above and Applicant respectfully requests that the § 103 rejection be withdrawn.

Claims 1-7, 11-13, 20 and 21 were rejected under 35 U.S.C. § 103(a) as being rendered obvious by Chen, Ye or Chang in view of Stegens.

In a nutshell, as discussed above, Chen and Chang each only teach “edge” or transverse coupling between resonators. Ye teaches away from the present invention by requiring split resonators and creating resonators having a transverse dimension that is quite wide since the resonators are split into section. As such, the transverse dimension of each section of the split resonators is quite large when compared to the width of the input line and a pseudo wave guide cover would not have an appropriate cut off frequency. Stegens teaches a cover over a microstrip interdigital filter but teaches away from the presently claimed invention by requiring that the dimension of the cover and shims be chosen so as to produce a transmission zero immediately below the desired pass band. Col. 4, lines 13-16.

As such, Applicant submits that claims 1-7, 11-13, 20 and 21 are not taught, alluded to or rendered obvious by the cited art because the independent claims require, at least the resonator’s input and output portions to be longitudinally spaced such that there can be a longitudinal or edge coupling and that there be a plurality of resonators between the input and output portions such that the plurality of resonators each are transversely spaced or gap coupled. Furthermore, an enclosure is provided that substantially covers the plurality of resonators such that the enclosure is adapted to operate as a pseudo waveguide having a cutoff frequency above the operating frequency of the high frequency filter. The pseudo waveguide acts as a filter which does not transmit any frequencies below the waveguide’s cutoff frequency, which is above the operating frequency of the high frequency filter. As such, Applicant respectfully submits that the

cited art, does not teach, allude to or render obvious any of the rejected claims 1-7, 11-13, 20 and 21 and respectfully requests that the § 103 rejection be withdrawn.

Regarding the new claim

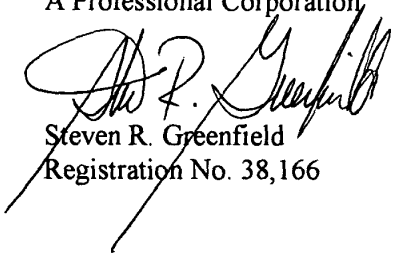
New claim 22 has been added and claims a high frequency filter which applicant respectfully submits is allowable over the cited art. Applicant respectfully requests that new claim 22 be carefully considered for allowance.

Should the Examiner have any further questions or comments facilitating allowance, the Examiner is invited to contact Applicant's representative indicated below to further prosecution of this application to allowance and issuance.

In view of the above, it is believed that this application is in condition for allowance, and such a Notice is respectfully requested.

Respectfully submitted,

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